F. S. ENGLISH.

DEVICE FOR HOLDING PRINTING PRESS CUTTER SHAFTS.

APPLICATION FILED AUG. 12, 1918.

1,380,644.

Patented June 7, 1921.

3 SHEETS—SHEET 1.

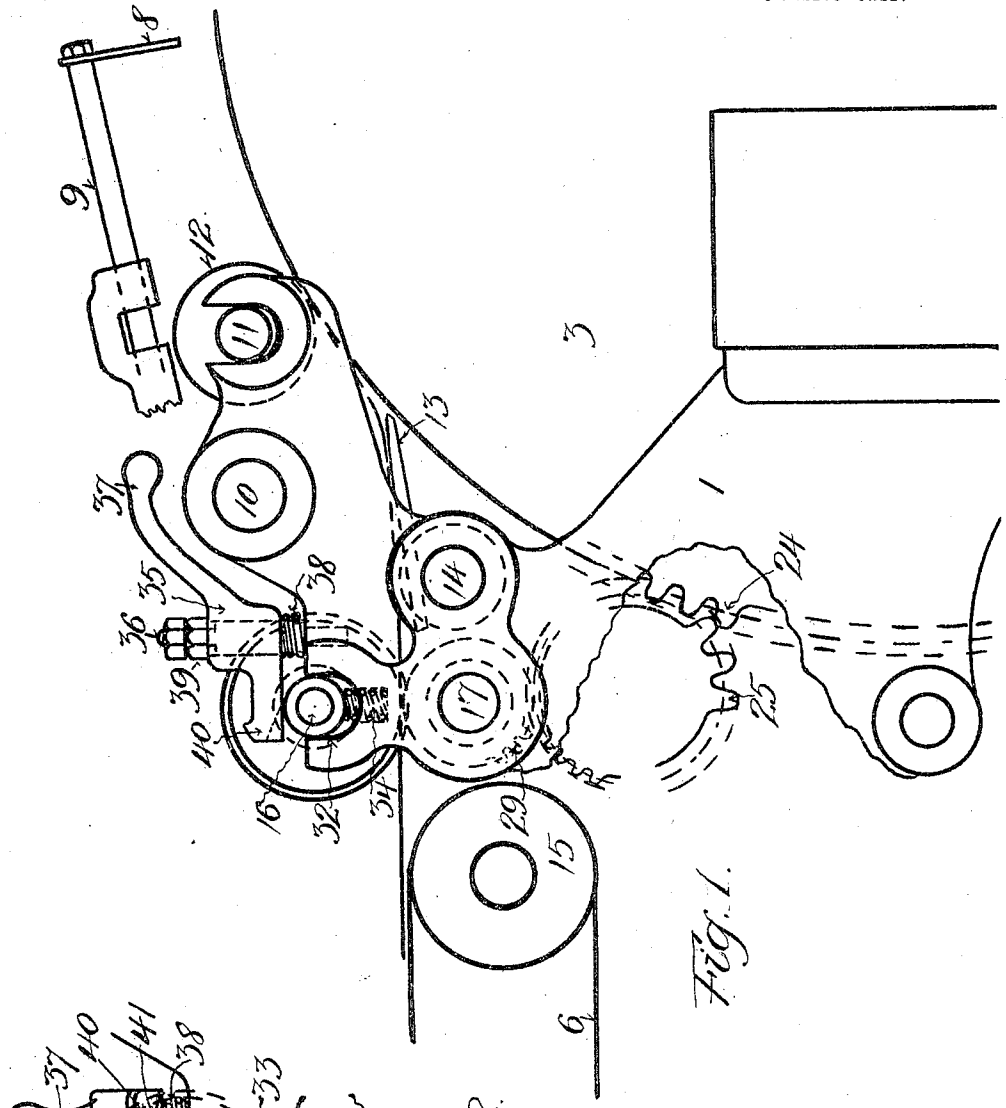

Fig. 1.

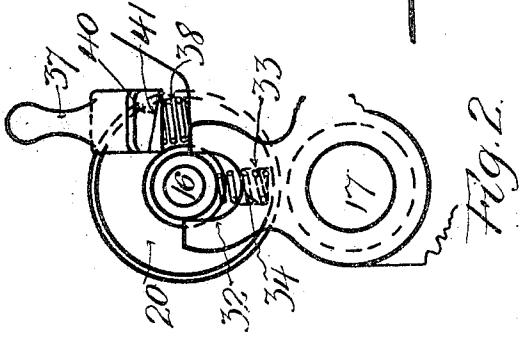

Fig. 2.

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By his Attorney
Charles G. Hensley

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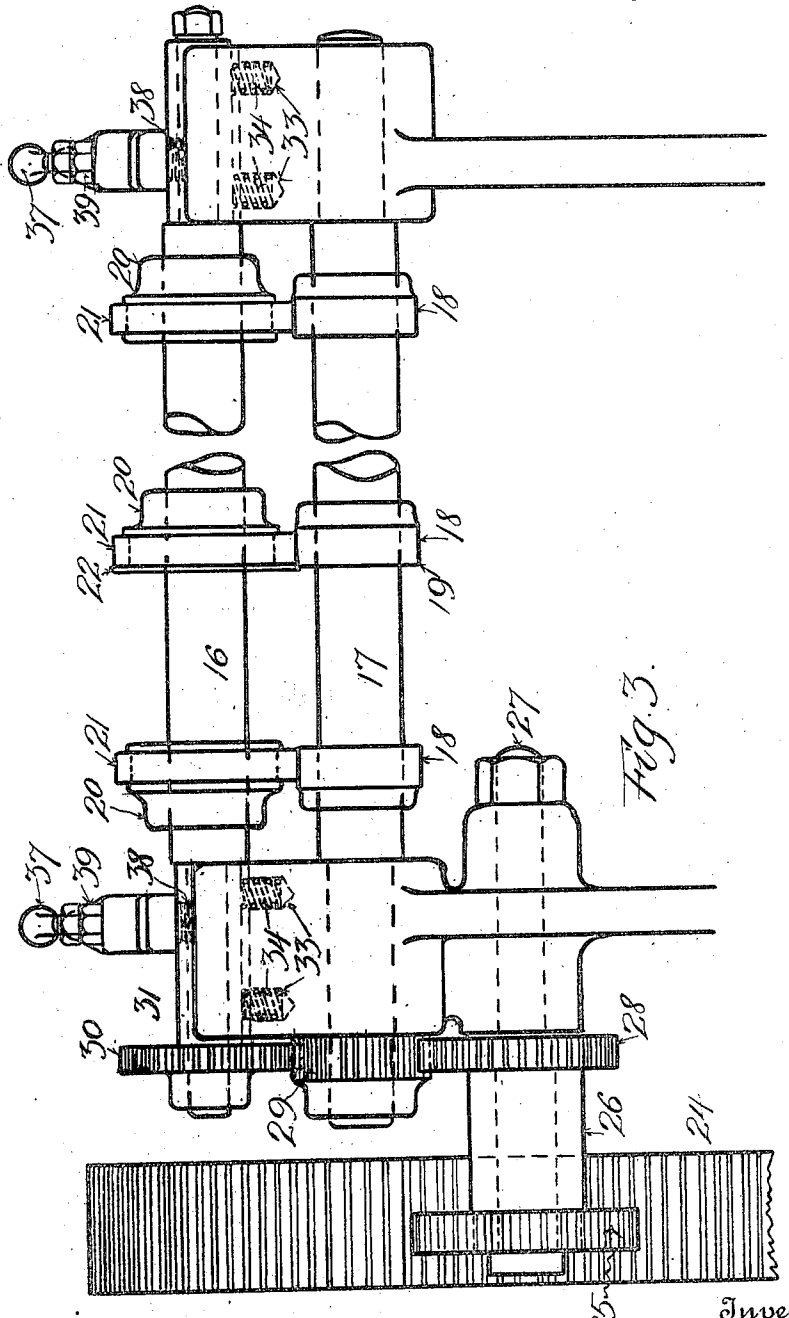

Fig. 3.

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3 SHEETS—SHEET 3.

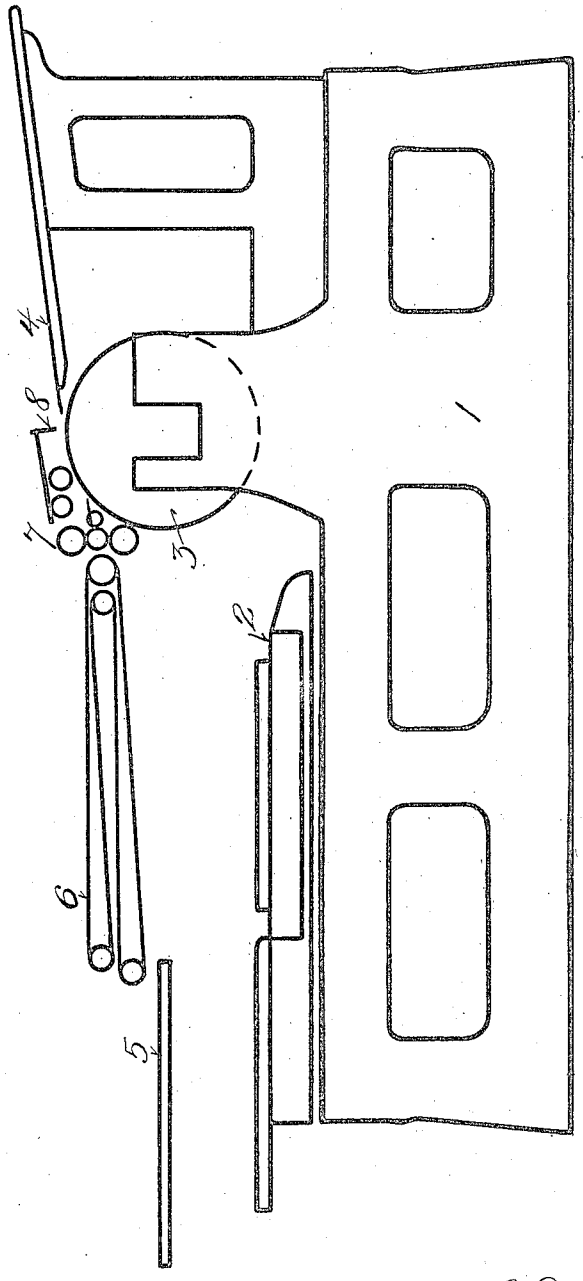

Fig. 4.

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UNITED STATES PATENT OFFICE.

FRED S. ENGLISH, OF NEW LONDON, CONNECTICUT, ASSIGNOR TO THE BABCOCK PRINTING PRESS MANUFACTURING COMPANY, OF NEW LONDON, CONNECTICUT, A CORPORATION OF CONNECTICUT.

DEVICE FOR HOLDING PRINTING-PRESS CUTTER-SHAFTS.

1,380,644. Specification of Letters Patent. Patented June 7, 1921.

Application filed August 12, 1918. Serial No. 249,410.

To all whom it may concern:

Be it known that I, FRED S. ENGLISH, a citizen of the United States, and a resident of New London, in the county of New London and State of Connecticut, have invented certain new and useful Improvements in Devices for Holding Printing-Press Cutter-Shafts, of which the following is a specification.

My invention relates to a device for adjustably holding the shaft on which the sheet cutters of a printing press are carried, and the invention is shown herein as applied to a two revolution printing press. It is customary in such presses to provide one or more rotary cutters in order that the printed sheets may be cut into two or more sections as they leave the cylinder, whenever it is desirable. These cutters are usually arranged on shafts one of which is vertically adjustable in relation to its companion shaft in order that the propelling members or wheels of the cutting device may be adjusted to suit stock of any thickness and so that the propelling wheels at both sides of the press may correspond. In the devices heretofore used for holding down the adjustable shaft provision has been made for adjusting the shaft to suit sheets of different thicknesses but whenever the shaft is raised or removed for any purpose the adjustment is altered and when the shaft is returned the adjustment must be made all over again. It often happens that a sheet becomes "balled up" in the cutting device and it then becomes necessary to raise the adjustable cutter shaft or, possibly, to temporarily remove it so that the "balled up" sheet may be cleared away. It is very annoying and tedious to have to adjust the shaft all over again when this occurs as it is necessary that the two ends of the shaft be adjusted alike as otherwise the propelling wheels at one side of the press will move the sheet faster than those at the other side and the sheet will not be propelled through the cutting device straight and therefore it will not be cut straight. Therefore, it is necessary that both ends of the cutter shaft be adjusted to cause the propelling wheels to act on all parts of the sheet uniformly. As the thickness of the stock varies on different jobs, ranging from very thin paper to heavy cardboard, the position of the cutter shaft must be suitable for the particular stock being printed. With the present device the cutter shaft may be raised or even entirely removed and it may be quickly and very easily returned to its original position without having to readjust any parts. The simple operation of throwing a pair of levers will serve either to release the shaft to permit it to be raised, or to return the shaft to its original position and to hold it there. The device is adjustable but it permits the shaft to be raised and returned without necessarily disturbing the adjustment.

In the drawings forming part of this application,

Figure 1 is a side elevation of parts of a printing press having my invention applied thereto,

Fig. 2 is a detail view showing the hold down device thrown off and the cutter shaft raised,

Fig. 3 is a view showing the principal parts of the device in end elevation, and

Fig. 4 is a diagrammatic view of a printing press indicating the location of the present device on the press.

The press shown herein is what is known as a two revolution press or one in which the cylinder makes two revolutions for each cycle of operations. In such presses the sheet is taken by the cylinder and printed during the first revolution of the latter and the sheet is delivered during the second revolution thereof, the bed making its printing stroke during the first revolution of the cylinder and its return stroke during the second revolution thereof.

In Fig. 4 I have indicated the frame 1 of such a press, the reciprocating bed 2, the impression cylinder 3, the feed board 4, the receiving table 5 and the delivery tapes 6. I have also indicated at 7 the cutting device.

In the drawings I have shown a common form of feed guide 8 against which the sheets are fed by the press feeder, and this guide is carried on an arm 9 which oscillates with the shaft 10. The guide 8 is lowered to a position near the cylinder 3 while the sheet is being fed and it is lifted away from the cylinder, as shown in Fig. 1, during the second revolution, to permit the sheet to pass under it. On the shaft 11 are arranged

rollers 12 which rest against the cylinder 3 or against the sheet which is moving with it and these rollers are operated by the cylinder and guide the sheet out after it is released by the grippers (not shown). The fingers 13 carried on the shaft 14 move down near the cylinder when the sheet is to be delivered and they serve to strip the sheet from the cylinder and guide it toward the cutting device.

At 6 is shown the delivery tapes mounted on the pulleys 15 but the particular form of delivery forms no part of the present invention. All of the above devices are in general use so that their construction and operation are understood.

The shafts 16 and 17 are respectively, the upper and lower shafts of the cutting device. The lower shaft 17 carries any desired number of metal wheels 18 spaced apart on the shaft and each of these wheels has a squared cutting or shearing edge 19. These wheels, or one or more of them, cooperate in propelling and cutting the sheet. On the upper shaft 16 there are arranged wheels 20 positioned over the wheels 18 on the lower shaft and each of these preferably has a rubber tire 21 for pressing on the sheet and against the wheels 18. Wherever the sheet is to be cut a wheel 20 is provided with a blade 22 the edge of which extends beyond the tire 21 and lies close to and overlapping the sharp edge 19 of one of the lower wheels 18 and by coöperating with this edge the blade cuts the sheet lengthwise as it is propelled along. The wheels 20 which are not provided with a blade simply serve to propel the sheet. It will be understood that the number and position of the wheels having a blade will depend upon the number and position of the cuts which are to be made in the sheet. At 23 I have shown the position of a sheet as it is being propelled through the cutting device, from which it will be apparent that it is cut while traveling from the fingers 13 to the delivery tapes 6.

The shafts 16 and 17 are usually driven from the cylinder gear. At 24 I have shown the cylinder gear operating on the gear 25 which is fixed to or integral with a sleeve 26 mounted on the shaft 27. There is another gear 28 either integral with or fixed to the sleeve 26 and this in turn, meshes with the gear 29 on the lower cutter shaft 17. The upper cutter shaft 16 has a gear 30 meshing with and driven by the gear 29 on the lower shaft 17. By means of the chain of gears just described the upper and lower cutter shafts are turned in opposite directions so that their respective wheels propel and at the same time cut the sheets.

The upper shaft 16 of the cutting device must be held down in order that the tires 21 may exert sufficient pressure on the sheets to propel them and, naturally, the shaft will have to be held lower when thin sheets of paper are being cut than when heavy sheets of paper, or even cardboard are being cut, so that the position of the shaft 16 in relation to the shaft 17 must necessarily be adjustable to secure the desired pressure on the sheets. The pressure should be equal at different places across it for if the wheels at one side exert a much greater pressure than those at the other side the sheet will not be propelled straight and, therefore, it will not be cut straight. Usually, the shaft 16 is held down in various adjusted positions by hooks in which the adjustment is lost whenever the hooks are released. Sometimes a sheet becomes "balled up" while traveling through the cutting device and it is necessary to remove the sheet to clear the way for subsequent sheets. This necessitates raising the shaft 16 or even temporarily removing it and in former devices the adjustment for even pressure above referred to had to be made all over again when the shaft was returned to active position. In the present case the upper shaft 16 may be raised or even removed and it may be afterward returned to the same condition of adjustment by a simple operation.

Each end of the shaft 16 has a sleeve 31 which sleeves are adapted to move vertically in the journal sockets 32 which the open at the top. In sockets 33 of the frame structure there are provided springs 34 which exert upward pressure on the sleeves 31 sufficient to raise the shaft 16 and its wheels to the highest position at which the shaft is likely to be operated or even higher. There is a lever 35 at each side of the press fulcrumed on the studs 36 and each has a handle 37 by means of which the levers may be operated. There is a spring 38 coiled around each stud 36 and they exert an upward pressure on their respective levers to hold the latter against the nut 39 in whatever position of adjustment the latter may be. The arm 40 of each lever 35 is adapted to engage over and hold down a sleeve 31 in opposition to the springs 34 thus holding the shaft 16 and its wheels and cutters in position for operation.

When the levers 35 are in the position shown in Fig. 1 the springs 34 exert upward pressure on the sleeves 31 and hold them tightly against the arms 40 and the position of shaft 16 will depend upon the position of these levers. The position of the levers may be adjusted by moving the nuts 39 down or up on the stud 36, thus forcing the lever 35 down farther and with it the shaft and wheels and cutter blades or else allowing these to be forced up by the springs 34 to a higher position. Usually, this adjustment will be made for each job, to agree with the thickness of stock

to be printed and it is desirable to retain the adjustment until a different stock is to be printed.

If a sheet becomes "balled up" so that it is necessary to raise or remove the upper wheels, it is only necessary to turn the levers 35 around about 90° to the position shown in Fig. 2. Immediately, the upper shaft 16 is released and it will be lifted by the springs 34 so that the wheels 20 will disengage from the wheels 18. If there is not sufficient space to get at the damaged sheet, the shaft 16 with the wheels and blade thereon may be temporarily lifted off the press. To return the shaft 16 to position after the damaged sheet has been removed it is only necessary to turn back the levers 35 and they will force the shaft and associated parts back to their former positions. The raising or removal of the shaft is thus accomplished without necessarily altering the adjustment, but the device is nevertheless subject to adjustment whenever necessary.

I prefer to chamfer the under side of the arms 40 as is shown at 41 in Fig. 2 so that the arms will pass easily over the end of the sleeve.

While I have shown my invention applied to a two revolution printing press the invention is obviously not limited to this particular adaptation.

Having described my invention, what I claim is:

In a printing press a device for cutting the sheets into sections as they are delivered from the impression cylinder and comprising upper and lower shafts, coöperating propelling and cutting devices on said shafts, springs acting to raise said upper shaft, levers for forcing down said upper shaft in opposition to said springs, springs for forcing said levers upwardly and means for adjusting the position of said levers, said levers having cams and adapted to effect the release and return of said upper shaft to position without disturbing the adjustment of said adjusting means.

Signed at New London, county of New London and State of Connecticut this 25th day of July, 1918.

FRED S. ENGLISH.